United States Environmental Protection Agency

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Human Health Benchmarks for Pesticides

Summary

EPA has developed a table of human health benchmarks for approximately 350 non-carcinogenic pesticides that are currently registered to be used on food crops. These human health benchmarks for pesticides are levels of certain pesticides in water at or below which adverse health effects are not anticipated from one-day or lifetime exposures. The benchmarks are for pesticides for which the agency has not issued a drinking water health advisory or set an enforceable federal drinking water standard.

EPA developed the human health benchmarks for pesticides to enable states, water systems and the public to better determine whether the detection of a pesticide in drinking water or source waters for drinking water may indicate a potential health risk. The human health benchmarks for pesticides were developed with the same methods used by the Agency to calculate health advisories for drinking water and are based on data that were peer-reviewed in EPA's pesticide registration process.

The table of benchmarks can be found on EPA's website at: http://www.epa.gov/pesticides/hhbp . EPA intends to update the online human health benchmarks for pesticides table annually to ensure that the best available science is accessible to the public. Current EPA health advisories and enforceable drinking water standards for other pesticides can be viewed at: http://water.epa.gov/action/advisories/drinking/drinking_index.cfm.

Background

On March 22, 2010, EPA Administrator, Lisa P. Jackson announced a new drinking water strategy that outlines four principles to expand public health protection. One of these principles is to use the authority of multiple laws to more effectively protect drinking water, by sharing data collected under different statutes. EPA derived the human health benchmarks for pesticides by applying the health effects data from pesticide registrations under the Federal Insecticide, Fungicide and Rodenticide Act and tolerances from the Federal Food Drug and Cosmetics Act as amended by the Food Quality Protection Act, to the typical methods used for developing drinking water health advisories under the Safe Drinking Water Act.

EPA is providing the benchmarks for informational purposes for use by states, water systems and the public to help understand monitoring data for pesticides that have no drinking water standards or health advisories. Drinking water systems can also use them as reference values to respond to customer inquiries if pesticides are detected in monitoring.

Development of Human Health Benchmarks for Pesticides in Drinking Water

To derive human health benchmarks for pesticides, EPA used the acute or chronic reference doses determined for human dietary assessment for the most sensitive population and applied standard exposure assumptions used in calculating health advisories based on gender, age, bodyweight, and water consumption of target populations. For the acute benchmark, the entire exposure is assumed to occur from drinking water (100 percent). For the chronic benchmark, EPA applied a default relative drinking water source contribution (20 percent), assuming additional exposure may arise from other sources, like food, air or contact.

At present, human health benchmarks for pesticides are for non-cancer health endpoints only. Benchmarks based on cancer effects are not currently evaluated but EPA intends to derive these benchmarks at a later time. The human health benchmarks for pesticides table includes mainly active ingredients at this time, and thus inert compounds used in pesticide formulations are not included.

Human health benchmarks for pesticides do not contain Food Quality Protection Act safety factors in reference does, as they are not part of the standard methodology used for calculating health advisories under the Safe Drinking Water Act.

For More Information

For more information regarding derivation of human health benchmarks for pesticides send an email to Santhini Ramasamy at ramasamy.santhini@epa.gov. For information regarding the documentation for deriving the reference doses send an email to Brenda May at may.brenda@epa.gov.